DRAFT

Uncontrolled Vapor Emission Factor at Gasoline Dispensing Facilities

January 5, 2000

An updated summertime uncontrolled emission factor of 7.6 pounds per thousand gallons dispensed for organic gas emissions from the vehicle refueling operations at gasoline dispensing facilities is proposed for Enhanced Vapor Recovery emission reduction calculations and future emission inventories. A brief history of the summertime uncontrolled emission factor is provided below. Comments are welcomed.

Before California Clean Burning Gasoline….

The uncontrolled *Vehicle Refueling – Vapor Displacement* emission factor for California gasoline sold prior to 1992 was 10.0 pounds per thousand gallons throughput as derived from ARB certification testing. Gasoline sold prior to 1992 had a Reid Vapor Pressure of 9.0 pounds per square inch (psi) during the summer season as defined by RVP regulations.

Phase I Reformulated Gasoline

Emission Factor Reduction Due to RVP Change

As a result of the introduction of Phase I reformulated gasoline in 1992, an estimated 13% reduction in the emission of volatile organic compounds (VOCs) from gasoline occurred. This was related to Phase I reformulated gasoline's lower Reid Vapor Pressure of 7.8 psi. The Reid Vapor Pressure is a measurement of the gasoline's tendency to evaporate. Therefore, the emission factor of 10.0 pounds per thousand gallons throughput would be reduced to 8.7 pounds per thousand gallons.

Supporting Field Data

Gasoline speciation data collected in 1993 resulted in an emission factor of 8.4 pounds per thousand gallons throughput. This value was used in the 1996 vapor recovery regulation amendments.

Phase II Reformulated Gasoline

Emission Factor Reduction Due to RVP Change

An estimated additional 12% reduction in emissions occurred as a result of the introduction of Phase II reformulated gasoline in April of 1996. This was related to Phase II reformulated gasoline's lower Reid Vapor Pressure of 7.0 psi. Therefore, the emission factor of 8.7 pounds per thousand gallons throughput should be reduced to 7.6 pounds per thousand gallons throughput (a further reduction of 12%).

Supporting Field Data

ARB conducted certification tests during the summer RVP season at seven gasoline dispensing facilities since April of 1996 (see the attached field data results). The average measured emission factor from these studies was 7.6 pounds per thousand gallons throughput.

Wintertime Uncontrolled Emission Factor

ARB staff recognize that wintertime uncontrolled emissions are likely higher due to the higher RVP allowed during the winter months. Further work is planned to develop an uncontrolled emission factor for winter fuels.

For further information, please contact Tom Scheffelin of the Air Resources Board at (916) 322-8922 or tscheffe@arb.ca.gov (e-mail).

DRAFT Calculation of Uncontrolled Emissions Using
Phase II Reformulated Gasoline based on Summer100 Car Test Results

January 5, 2000

100 Car Test	Fuel Dispensed (Gallons)	Reid Vapor Pressure (psi) Limit for Summer Fuel	Mass of Hydrocarbon in Vapor Returned to UST (Pounds)	Total Mass of Hydrocarbon Expelled From Vehicle (Pounds)	Uncontrolled Mass of Hydrocarbon (Pounds/1000 Gallons)
July 1999 OPW	1012	7.0	8.53	0.306	8.73
April 1999 Saber Technologies	981	7.0	6.37	0.095	6.59
June 1998 Healy	886	7.0	5.42	0.292	6.45
August 1997 Hasstech	1012	7.0	9.35	0.159	9.39
September 1996 Healy	939	7.0	6.69	0.224	7.37
September 1996 Catlow/Blackmer	842	7.0	6.60	0.132	7.99
April 1996 Hirt	679	7.0	4.39	0.145	6.68
Average	907	na	6.76	0.193	**7.60**